



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,258	12/01/2003	Shiro Tsunai	A427-1	1724

21254 7590 06/20/2006

MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC  
8321 OLD COURTHOUSE ROAD  
SUITE 200  
VIENNA, VA 22182-3817

EXAMINER

WYATT, KEVIN S

ART UNIT	PAPER NUMBER
----------	--------------

2878

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/724,258	<b>Applicant(s)</b> TSUNAI, SHIRO	
	<b>Examiner</b> Kevin Wyatt	<b>Art Unit</b> 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on 3/20/2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-17 is/are allowed.
- 6) ☒ Claim(s) 1,4,8 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 2,3,5-7,9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This Office Action is in response to the amendment and remarks filed on 03/20/2006. Currently, claims 1-20 are pending.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,4,8, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Oozu (U.S. Patent No. 5,801,373).

Regarding claim 1, Oozu shows in Figs. 37-38 a charged coupled device CCD image sensor comprising at least four charge transfer devices each, transferring signal charges in a column direction (IR-CCD1-2, RCCD1-2, GCCD1-2, and BCCD1-2); a charge-detecting capacitor receiving signal charges at different timings (col. 16, lines 51-55) from one another from said charge transfer devices through an output gate to which said charge transfer devices are connected (col. 16, lines 27-30); and a charge-detector detecting signal charges stored in said charge-detecting capacitor (col. 16, lines 27-32).

Regarding claim 4, Oozu shows in Fig. 38 comprising: a diode row extending between charge transfer devices (upper and lower CCD registers, col. 16, lines 51-55) located adjacent to each other, said diode row including a first group of photodiodes supplying signal charges to one of said charge transfer devices and a second group of

photodiodes supplying signal charges to the other of said charge transfer devices, photodiodes belonging to said first group and photodiodes belonging to said second group being alternately arranged.

Regarding claim 8, Oozu shows in Figs. 37-38 a CCD image sensor comprising: first, second and third charge transfer devices (upper and lower CCD registers, col. 16, lines 51-55) each transferring signal charges in a column direction; a first diode row extending between said first and second charge transfer devices, said first diode row including a first group of photodiodes supplying signal charges to said first charge transfer device and a second group of photodiodes supplying signal charges to said second charge transfer device wherein photodiodes belonging to said first group and photodiodes belonging to said second group are alternately arranged (upper and lower CCD registers respectively store odd and even signals, col. 16, lines 52-53); a second diode row extending between said second and third charge transfer devices, said second diode row including a third group of photodiodes supplying signal charges to said second charge transfer device and a fourth group of photodiodes supplying signal charges to said third charge transfer device wherein photodiodes belonging to said third group and photodiodes belonging to said fourth group are alternately arranged (upper and lower CCD registers respectively store odd and even signals, col. 16, lines 52-53); a charge-detecting capacitor receiving signal charges at different timings from one another from said first to third charge transfer devices through an output gate to which said first to third charge transfer devices are connected (col. 16, lines 27-30); and a

Art Unit: 2878

charge-detector detecting signal charges stored in said charge-detecting capacitor (col. 16, lines 27-32).

Regarding claim 18, Oozu shows in Fig. 38 a CCD image sensor according to claim 1, wherein said at least four charge transfer devices comprise: at least two dual CCD-type image photodiodes.

Regarding claim 19, Oozu discloses that at least four charge transfer devices may comprise: a CCD image sensor that outputs a single type of image signal (col. 7, lines 46-54 and 57-64, indicate that each charge transfer device may receive signals (R, G, B or IR) of any of the selected wavelengths with photoelectric material that is sensitive to all selected ranges).

Regarding claim 20, the CCD image sensor according to claim 1, wherein said signal charges received at different timings from one another are controlled by at least two dual-phase driving signals (col. 16, lines 52-53, indicate that charge transfer devices are driven by signals having two phases).

### ***Allowable Subject Matter***

3. Claims 11-17 are allowed.
4. Claims 2-3, 5-7, and 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
3. The following is a statement of reasons for the indication of allowable subject matter:

Claims 2 and 9 are allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor, comprising, in addition to the other recited features of the claim, an output gate comprised of gate electrodes in three stages, arranged in a direction in which said signal charges are transferred.

Claim 3 and 10 are allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor comprising, in addition to the other recited features of the claim, a middle-stage gate electrode has a projection projecting towards an initial-stage gate electrode.

Claim 5 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor, comprising, in addition to the other recited features of the claim, a first diode row extending between a pair of charge transfer devices and a second diode row extending between another pair of charge transfer devices are arranged at pitches different from each other.

Claim 6 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor, comprising, in addition to the other recited features of the claim, a first diode row and a second diode row of photodiodes staggered by a half pitch.

Claim 7 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor, comprising, in addition to the other recited features of the claim, two diode rows extending between a pair of charge transfer devices and two diode rows extending between another pair of charge transfer devices are arranged at pitches different from each other.

4. The following is an examiner's statement of reasons for allowance:

Regarding claim 11, the prior art fails to disclose or make obvious a ccd image sensor comprising, in addition to the other recited limitations of the claim, "photodiodes in said second diode row being staggered by a half pitch relative to photodiodes in said first diode row."

Regarding claim 12, the prior art fails to disclose or make obvious a ccd image sensor comprising, in addition to the other recited limitations of the claim, "c) third and fourth diode rows photodiodes wherein, said third row being staggered by a quarter pitch relative to photodiodes in said first diode row; and d) photodiodes in said fourth diode row being staggered by a quarter pitch relative to photodiodes in said second diode row."

Regarding claim 13, the prior art fails to disclose or make obvious a ccd image sensor comprising, in addition to the other recited limitations of the claim, "a third diode row extending in parallel with said first and second diode rows photodiodes wherein, said third row being arranged at a pitch twice greater than a pitch at which photodiodes in said first and second rows are arranged."

Regarding claim 15, the prior art fails to disclose or make obvious a ccd image sensor comprising, in addition to the other recited limitations of the claim, "a second- or later-stage gate electrode having a projection projecting towards the previous-stage gate electrode."

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

3. Applicant's arguments filed 03/20/2006 have been fully considered but they are not persuasive.

In response to applicant's argument regarding claims 1, 4 and 8, that the Office Action fails to address and Oozu et al. fails to teach or suggest Applicant's claims recitation of " a charge-detecting capacitor receiving signal charges at different timings from one another from said charge transfer devices through an output gate to which said charge transfer devices are connected," the examiner disagrees. Col. 16, lines 51-55 state that the charges of the upper and lower registers are stored as odd and even signals respectively.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not



Art Unit: 2878

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

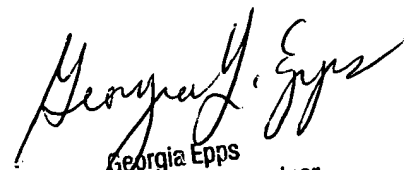
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Wyatt whose telephone number is (571)-272-5974. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571)-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



K.W.



Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800